

Reporting System -- FIGS. 25-48

The performance management systems in the broadband wireless system 100 provide the user with the performance information in a graphical format. The graphical format could be any user-friendly presentation such as reports, screens, and web pages. The performance management system performs various functions to provide the performance information such as interfacing with the user, retrieving performance information, polling probes for performance information, calculating performance information, and generating a graphical format of the performance information.

FIGS. 25-48 disclose one embodiment of the invention, but the invention is not restricted to the configuration provided below. Those skilled in the art will appreciate numerous variations in a performance management system configuration and operation that are within the scope of the invention. Those skilled in the art will also appreciate how the principles illustrated in this example can be used in other examples of the invention. In this embodiment, the performance management system in the broadband wireless system 100 is multi-level at a national, regional, and market level. Each performance management system may perform the same reporting functions as the other performance management system in the same or different level. In the embodiment in FIGS. 25-48, the market performance management system 430 performs the reporting functions. The performance management systems may comprise separate systems for the various functions such as an Apache web server, the market reporting system 440, the regional reporting system 340, or the national reporting system 240 to handle the user interface. However, for this embodiment, one market performance management system 430 performs all the reporting functions.

FIG. 25 is a flow chart for the market performance management system 430 in an example of the invention. FIG. 25 begins in step 2500. In step 2502, the market performance management system 430 receives an instruction, including parameters, for the performance information from a user system. In step 2504, the market performance management system 430 processes the

instruction, including the parameters, to determine the performance information. The market performance management system 430 generates a graphical format of the performance information in step 2506. The market performance management system 430 transmits the graphical format of the performance information to the user system in step 2508. FIG. 25 ends in step 2510.

FIG. 26 is a flow chart for the market performance management system 430 for monitoring performance information in an example of the invention. FIG. 26 begins in step 2600. In step 2602, the market performance management system 430 monitors performance information in a communication network. In step 2604, the market performance management system 430 stores the performance information in a memory. In step 2606, the market performance management system 430 retrieves the performance information from the memory. In step 2608, the market performance management system 430 generates a graphical format of the performance information. In step 2610, the market performance management system 430 transmits the graphical format of the performance information to a user system. FIG. 26 ends in step 2612.

FIG. 27 is a block diagram that illustrates a map of web pages of the performance management system in an example of the invention. A national headquarter page 2700 is connected to a market page 2710. The market page 2710 is connected to a Cyber Manager (CM) status page 2720, a Hybrid System Management Protocol (HSMP) query page 2730, a hybrid probe page 2740, a NetScout statistics page 2750, a protocol statistics page 2760, a Multi Router Traffic Grapher (MRTG) statistics page 2770, a sector probe page 2780, a key performance page 2790, and a SIF statistics page 2795. The CM status page 2720 is connected to an FEC summary page 2722, an FEC channel page 2724, an SNR summary page 2726, and a peak/load capacity page 2728. The protocol statistics page 2760 is connected to a protocol statistics by IP page 2762 and a usage summary page 2764. The web pages are discussed in greater detail below in FIGS. 31-48.

FIG. 28 is a flow chart for the market performance management system 430 for polling probes in an example of the invention. FIG. 28 begins in step

2800. In step 2802, the market performance management system 430 generates and transmits a Simple Network Management Protocol (SNMP) message to poll the probes for performance information. The market performance management system 430 then receives the performance information from the probes via  
5 SNMP in step 2804. In step 2806, the market performance management system 430 stores the performance information in the market database system 435. In step 2808, the market performance management system 430 retrieves the performance information from the market database system 435 for generating reports. In step 2810, the market performance management system 430  
10 generates and transmits reports in HTML with the performance information. The market performance management system 430 then stores the reports in an HTML fragment repository to be used for future reports in step 2812. FIG. 28 ends in step 2814.

FIG. 29 is a flow chart for a market performance management system 430 with an HTML fragment repository in an example of the invention. FIG. 29 begins in step 2900. In step 2902, the market performance management system 430 receives a request message for a report. The market performance management system 430 processes the request message to generate a report in step 2904. The market performance management system 430 then determines  
20 whether the performance information is in the HTML fragment depository in step 2906. If the performance information is in the HTML fragment depository, then the market performance management system 430 retrieves the performance information from the HTML fragment depository in step 2908. If the performance information is not in the HTML fragment depository, the market performance  
25 management system 430 retrieves the performance information from the market database system 435 in step 2910.

The market performance management system 430 then determines whether all the performance information has been obtained in step 2912. If all the performance information has not been obtained, then the market  
30 performance management system 430 returns to step 2906. If all the performance information has been obtained, then the market performance